What is claimed is:

1. A dual mode communications receiver for detecting and demodulating radio signals carrying information which has been encoded and modulated onto a carrier of either wide or narrow bandwidth for transmission, comprising:

means for subdividing the detected band into sub-bands ,

means for superimposing the sub-bands into a plurality of components with a bandwidth similar to the bandwidth of the sub-bands.

means for processing that portion of the information contained in each component separately, and

means for combining the processed information from the components to reconstruct the original information transmitted.

2. A communications receiver as set forth in claim 1 wherein the means for dividing the detected band into sub-bands comprises mixing the radio signal with a single local oscillator output to downconvert the radio signal to the frequency at which the processing is to occur and subsequently dividing the downconverted signal into components with bandwidth equal to the sub-bands for independent and simultaneous processing.

3. A communications receiver as set forth in claim 1 wherein the means for dividing the detected band into sub-bands comprises mixing the radio signal with a single local oscillator output to downconvert the radio signal to an intermediate frequency and subsequently dividing the downconverted signal into components with bandwidth equal to the sub-bands for independent and simultaneous processing.

4. A communications receiver as set forth in claim 2 wherein the means for dividing the detected band into components with bandwidth equal to the sub-bands further comprises mixing the downconverted signal with locally generated signals to produce the components.

5. A communications receiver as set forth in claim 4 where the mixing with the locally generated signals uses multiplier DAC's with the digital input driven by the low frequency digital local oscillator signals.

6. A communications receiver as set forth in claim 5 where the multiplier DAC's provide Gain Control for Automatic Gain Adjustment.

7. A communications receiver as set forth in claim 4 wherein the means for processing that portion of the information contained in each of the components with bandwidth equal to the sub-bands comprises an analog to digital converter.

8. A communications receiver as set forth in claim 7 wherein the analog to digital converter is a sigma-delta analog to digital converter with a programmable oversampling ratio for Wideband or Narrow band conversion.

9. A method for operating a dual mode communications receiver for detecting and demodulating radio signals carrying information which has been encoded and modulated onto a carrier of either wide or narrow bandwidth for transmission, comprising:

subdividing the detected band into a plurality of sub-bands,

processing that portion of the information contained in each sub-band separately, and

combining the processed information from the sub-bands to reconstruct the original information transmitted.

10. A method as set forth in claim 9 wherein subdividing the detected band into sub-bands comprises mixing the radio signal with a single local oscillator output to downconvert the radio signal to the frequency at which the processing is to occur and subsequently dividing the downconverted signal into components with bandwidth equal to the sub-bands for independent and simultaneous processing.

11. A method as set forth in claim 9 wherein subdividing the detected band into sub-bands comprises mixing the radio signal with a single local oscillator output to downconvert the radio signal to an intermediate frequency and subsequently dividing the downconverted signal into components with bandwidth equal to the sub-bands for independent and simultaneous processing.

12. A method as set forth in claim 10 wherein the means for dividing the detected band into components with bandwidth equal to the sub-bands further comprises mixing the downconverted signal with locally generated signals to produce the components.

13. A method as set forth in claim 12 wherein the means for processing that portion of the information contained in each of the

components with bandwidth equal to the sub-bands comprises an analog to digital converter.

14. A method as set forth in claim 13 wherein the analog to digital converter is a sigma-delta analog to digital converter with a programmable oversampling ratio for Wideband or Narrow band processing.

15. A communications receiver adapted to receive and process information transmitted on either a wide band carrier or a narrow band carrier having In-phase-Quadrature-phase (IQ) modulation, comprising:

means for detecting a portion of the spectrum wide enough to encompass the wide band carrier (BW),

means for converting the wide band carrier to baseband in I and Q components, each component having a bandwidth of BW/2,

means for converting the I and Q components into further I and Q components to form components II, IQ, QI, and QQ, where each of the components has a bandwidth BW/4 and may contain a portion of the originally transmitted information,

means, in a wideband mode for separately processing each of the components to extract portions of the originally transmitted information, and

means, in a narrowband mode for separately processing each of the components containing information within the narrow band transmitted carrier to extract portions of the originally transmitted information, and

means for recombining the extracted information to reconstruct the originally transmitted information.

16. A method for receiving and processing information transmitted on either a wide band carrier or a narrow band carrier having In-phase-Quadrature-phase (IQ) modulation, comprising:

detecting a portion of the spectrum wide enough to encompass the wide band carrier (BW),

converting the wide band carrier to baseband in I and Q components, each component having a bandwidth of BW/2,

converting the I and Q components into further I and Q components to form components II, IQ, QI, and QQ, where each of the components have a bandwidth BW/4 and may contain a portion of the originally transmitted information,

in a wideband mode, separately processing each of the components to extract portions of the originally transmitted information, and

in a narrowband mode, separately processing each of the components containing information within the narrow band transmitted carrier to extract portions of the originally transmitted information, and

recombining the extracted information to reconstruct the originally transmitted information.

17. A method as set forth in claim 16 where the paths of two components are disabled in Narrow band mode.

18. A method as set forth in claim 16 where Digital gain and phase correction for the four components is performed in combination with the complex mixing with the digital local oscillator during the recombination process.

19. A method as in claim 18 where Phase discontinuity is removed by phase shifting the digital local oscillator during the recombination process.